

AUTHOR: ULANOV, G.M. PA - 2100  
 TITLE: The Covariance in Approximation to  $\xi$  in Linear, Combined, Automatically Controlled Systems. (Russian)  
 PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol 112, Nr 2, pp 253-256 (U.S.S.R.)  
 Received: 3 / 1957 Reviewed: 4 / 1957  
 ABSTRACT: The present work investigates this covariance in approximation to  $\xi$  which is due to the approximate satisfaction of the conditions of absolute covariance. A combined automatically controlled system, the structural scheme of which is illustrated by a drawing, is investigated.  
 $x(t)$  and  $x_{cov}(t)$  denote the processes which are due to a disturbance  $f(t)$  in an automatically controllable system in the case of a control based on the system of deviation and/or on the system of deviation and disturbance respectively:  

$$x(t) = L^{-1} \left\{ (N_1 / \Delta N) f(s) \right\}, \quad x_{cov}(t) = L^{-1} \left\{ ((N_1 - N_2) / \Delta N) f(s) \right\}.$$
 Here  $\Delta N$  denotes the characteristic polynomial of the systems,  $N_1$  and  $N_2$  the corresponding polynomials with the order  $k$  and  $l$ ,  
 $L$  - the LAPLACE-like representation of the inverse transformation,  $f(s)$  - the LAPLACE-like representation of the disturbance  $f(t)$ : it applies that  $N_1 = b_0 + b_1 s + b_2 s^2 + \dots + b_k s^k$

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and  $N_2 = \bar{a}_0 + \bar{a}_1 s + \bar{a}_2 s^2 + \dots + \bar{a}_n s^n$ . Similar to the conditions of absolute covariance, the dependence of the minimizing of  $x_{cov}(t)$  on the coefficients  $\bar{a}_i$  or  $a_i = b_i - \bar{a}_i$  ( $b_i$  is assumed) must be determined. By using the theorem concerning the behavior of the functions with respect to the expression  $x_{cov}(t)$  the following correlation is found between the processes in the case of control according to the principle of deflection and according to the principle of deflection and disturbance:  $x_{cov}(t) = \int_0^t \Phi(\tau) x(t - \tau) d\tau$ . This correlation is

written down also in a different form. The coefficients occurring in this connection are computed immediately from the parameters of the open and of the closed cycle of the system. In the case of the combined systems for automatic control these coefficients characterize the measure of covariance of these systems. Several peculiarities of the various systems are individually mentioned.

Next, the covariance in approximation to  $\xi$  of the linear

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systems investigated here are studied within a finite interval of time  $t$  ( $0 < t < t_1$ ). The "pulse function" of the system can be represented in form of a polynomial with respect to  $t$

without a free term:  $k(t) = \sum_{n=1}^{\infty} \alpha_n t^n$ . The definite expression

for  $x_{cov}(t)$  is explicitly given and developed in series according to  $t$ .

The conditions of covariance in approximation to  $\xi$  characterize the measure of undisturbedness of the system in dependence on the efficiency of coupling and the sufficiently small number of necessary effects. The conditions found here extend the range of applicability of the ideas of covariance in combined systems for automatic control.

ASSOCIATION: Not given

PRESENTED BY:

SUBMITTED:

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ULANOV, G. M.

AUTHOR: PETROV, V. V., ULANOV, G. M. PA - 2106  
TITLE: The Similarity of Sliding, Vibrational and Optimum Conditions  
of Motion in Servomechanisms (Russian).  
PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol 112, Nr 3, pp 394-397  
(U.S.S.R.)  
Received: 3 / 1957 Reviewed: 4 / 1957  
ABSTRACT: The present work deals with the similarity of sliding,  
vibrational, and optimum kinds of operation in servomechan-  
isms. It is shown that with the aid of these modes of operation  
the optimum kind of motion of servomechanisms can be realized.  
By vibration-like behavior of the servomechanism its motion  
in the case of the presence of a vibration contour with con-  
trol mechanism (relay) is here understood. By instantaneous  
kind of operation an instantaneous transition process is under-  
stood, which, under existing circumstances, develops within  
the shortest possible time. The similarity between these three  
kinds of operation consists in a nearly periodic motion of  
the relay with a frequency depending on the parameters of the  
servomechanism. Also the shape of couplings and the intensity  
of disturbances (detuning) plays a part.  
A drawing illustrates the structural schemata of the system of  
automatic control for the classical problem as well as the

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structural schemata of a servomechanism with velocity-dependent and firm back-coupling and of a servomechanism with two kinds of oscillatory circuits. The oscillation equations of the various schematas are given.

Some conclusions:

- 1) In the case of an indefinite relay function  $\Phi$  the system continuous to move in accordance with a certain diviation from the band, which, however, never exceeds the limit of the path, further within the band  $F = \sigma$ , with variable decreasing frequency of the switching device. The steady state of the system is a process of self-oscillation.
- 2) In the case of definite characteristic  $\Phi$  the system also moves further in accordance with a certain deviation along the switching-over line  $F = 0$ . If  $\Phi$  is the function of a linear argument, the motion of the system is linearized within the domain along the switching-over line. Its phase-trajectory is then a straight line determined by argument  $F$ , and the order of the equations describing the system is diminished by at least 1.
- 3) In the case of a nonlinear argument  $\Phi$ , in which case  $F(y, x) = \Psi_1(y, x)$  with  $\Psi_1(0, 0) = 0$  applies, the slizing manner of motion is identical with the optimum. The optimum process

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may therefore be considered to be a limiting- and special case of the sliding operation with the switching-over frequency of zero. Therefore optimum processes can be realized with a definite degree of accuracy by a corresponding selection of the parameters of the servomechanisms.  
(3 illustrations).

ASSOCIATION: Not given

PRESENTED BY: SOBOLEV, S.L., Member of the Academy.

SUBMITTED:

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U L A N O V - 4 , G . M .

AUTHOR: ULANOV, G.M. PA - 2646  
TITLE: On a Generalization of the Deflection accumulation Theory and its Use for Determining Autooscillations in Generators. (Ob odnom obobshchenii teorii nakopleniya otkloneniy i prilozheniye eye k opredeleniyu avtokolebaniy v generatorakh, Russian).  
PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol 113, Nr 1, pp 54 - 57 (U.S.S.R.)  
Received: 5 / 1957 Reviewed: 6 / 1957

ABSTRACT: The present work computes the accumulated deflections of compound functions of a regulatable quantity on the assumption that the disturbance  $f(t)$  is restricted with respect to the modulus or that the modulus of any disturbance is restricted. Furthermore, a graphical analytical method for the construction of the diagram of the accumulation of deflections is worked out. The steady linear system of automatic control may be described by the following equation:

$\Phi(s) L\{x(t)\} = g(s) L\{f(t)\}$ . Here  $\Phi(s)$  and  $g(s)$  denote polynomials with respect to  $s$  ( $s$  denotes the Laplace operator),  $L\{x(t)\}$  and  $L\{f(t)\}$  - Laplace transformations of  $x(t)$  and  $f(t)$  respectively. The author examines the problem of the accumulation of functions of a regulatable quantity of the type

$$x(t) = a_0 x(t) + a_1 \dot{x}(t) + \dots + a_k x^{(k)}(t) + b_0 \int_0^t x(t) dt + \dots + \int_0^t \dots \int_0^t x dt, \\ k < m - n$$

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On a Generalization of the Deflection Accumulation PA - 2646  
Theory and its Use for Determining Autooscillations in Generators

for the case in which a disturbance  $f(t)$  is restricted according to the modulus at upon the system mentioned above. The Laplace transformation of  $X(t)$  is written down. The accumulation of the function  $X(t)$  for the restricted modulus  $f(t)$  is determined by  $|f(t - \tau)| = 1$ ,  $\text{sign } H(t) = \text{sign}(t - \tau)$  for the entire time interval  $0 - t$ . A formula is also given for the maximum accumulated value of  $X(t)$ .

The diagram of the accumulation of deflections  $X_{\max}(t)$  is easily constructed on the basis of the "summarized transition function"  $H(t)$  the curve found is in this case monotonous. Next, a common feature shared by self oscillations and the accumulation process of deflections in certain generators is shown, and the amplitude and frequency of the resulting oscillations is determined on the basis of the analysis of the accumulation process of deflections.

ASSOCIATION: Institute for Automatics and Telemechanics of the Academy of Science of the U.S.S.R.

PRESENTED BY: S.L.Sobolev, Member of the Academy

SUBMITTED: 25.7.1956

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HLANOV, G.M.  
28(1) P.2

PHASE I BOOK EXPLOITATION SOV/3317

Moscow. Vyssheye tekhnicheskoye uchilishche. Kafedry "Avtomatika i telemekhanika"

Sistemy avtomaticheskogo regulirovaniya i upravleniya; nekotoryye voprosy teorii i tekhniki (Automatic Regulating and Control Systems; Some Problems in Theory and Technology) Moscow, Mashgiz, 1959. 166 p. (Series: Its Trudy, sbornik no. 97) 7,600 copies printed.

Ed.: V.K. Titov, Candidate of Technical Sciences; Tech. Ed.: Z.I. Chernova; Managing Ed. for Literature on Machine Building and Instrument Making (Mashgiz): N.V. Pokrovskiy, Engineer.

PURPOSE: The book is intended for teachers in schools of higher education, and for engineers and technicians engaged in problems of automation.

COVERAGE: This collection contains articles on the theory and technique of automatic regulation and control. The problems discussed concern calculation of optimum parameters of low-power servomechanisms, correction of a-c systems and systems of automatic regulation with a delay unit, and the construction of self-adjusting a-c systems. Several methods of improving the dynamic properties of servomechanisms, and methods of approximate investigation of pulse servo-

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Automatic Regulating and Control (Cont.)

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mechanisms, are also explained. Some considerations regarding possible ways of automating butt welding in a random direction are presented. The authors of this collection are all instructors in the department of "Automation and Remote Control" at MVTU imeni Bauman. The articles are based on scientific research work conducted by the department during the last five years. Some personalities are mentioned in each article. References are given after each article.

TABLE OF CONTENTS:

- Ulanov, G.M., Doctor of Technical Sciences. Development of the Invariancy Principle and of the Theory of Combined Systems of Regulation and Control 5
- According to the author, the theory of invariancy constitutes the basis of the theory of combined automatic systems which depend on two principles:
- 1) regulation and control as a function of deviation;
  - 2) regulation and control as a function of load. Mathematical problems of invariancy were developed in the Soviet Union by N.N. Luzin and P.I. Kuznetsov in 1945-1946. In 1948 Academician V.S. Kulebakin established conditions of invariancy with an accuracy up to the free component. Professors A.G. Ivakhnenko,

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A.J. Kukhtenko and other Ukrainian scientists contributed much to the advancement of the theory and methods of developing combined systems of automatic regulation and control. A tendency to unite the problems of combined systems and of self-adjusting systems appears in the works of V.V. Solodovnikov and A.M. Batkov (1956). The author summarizes the basic ideas of the Soviet scientists on the above problems.

Bibliography

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Shranko, I.S., Candidate of Technical Sciences. Problem of Self-adjusting Systems

15

The author investigates some a-c systems which develop an error signal of the type  $U_e(t) \cos \omega t$ . This signal, amplified and converted accordingly, is used for the control of certain actuating units (frequently, two-phase induction motors). There are two ways of converting this error signal:

- 1) with demodulation preceding the conversion of the a-c signal;
- 2) without intermediate demodulation

The author considers systems of the second type the more advantageous because of the absence of additional demodulating and modulating devices.

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He analyzes these systems, describes certain difficulties in their operation (e.g., those due to variations in frequency of the power supply), and concludes that further research on self-adjusting a-c systems should provide useful material for solving the general problem of self-adjusting systems.

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Karabanov, V.A., Candidate of Technical Sciences. Calculation of Optimum Parameters of Low-Capacity Servosystems With a Given Block Diagram 23

Bibliography 29

Plotnikov, V.N., Candidate of Technical Sciences. Improving the Dynamic Properties of High-speed A-C Servosystems 30

Bibliography 51

The authors of the two above articles present: 1) a calculation of optimum low-capacity servosystems with a given block diagram; 2) Some methods for improving the dynamic properties of high-speed a-c servosystems. They recommend reduction of the electromechanical time constant of the motor for the period of the system reaction by increasing the gain factor of the amplifier in the saturation zone. They also

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recommend the use of a two-channel control system for the drive (along the control and excitation windings).

Kavun, Ye.S., Candidate of Technical Sciences. Correcting Devices of A-C Servosystems

52

The author investigates electromechanical correcting devices which in practical operation are insensitive to changes in carrier frequency, do not require additional demodulators and modulators, and provide the necessary stabilizing effect.

Bibliography

67

Kavun, Ye.S., Candidate of Technical Sciences. Design and Construction of an Electromechanical Correcting Device

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The author outlines the sequence of calculations, discusses the selection of the basic components of the correcting device and describes their construction.

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Guzenko, A.I., Candidate of Technical Sciences. Designing Single-cycle Magnetic Power Amplifiers

85

This article presents a further development of the methods of calculating parameters of magnetic amplifiers containing an external feedback and a bias circuit which were suggested in the two articles given as references. The author presents a practical method of designing a single-cycle magnetic amplifier with a bias and an external feedback assembled from three-rod and toroidal cores.

Bibliography

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Pyatin, Yu.M., Candidate of Technical Sciences. Rational Selection of Parameters of Measuring Bridge Circuits

97

The author demonstrates that matching of bridge parameters with the resistance of the data unit of a Wheatstone measuring bridge system results in a relative and not an absolute power maximum in the measuring device. By this he also shows that K.B. Karandeyev's conclusion (Ref.1) on the inconsistency of Heaviside's optimum conditions is erroneous. The author states that his findings apply to any electric circuit.

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Automatic Regulating and Control (Cont.)

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Pyatin, Yu.M., Candidate of Technical Sciences. Contact Devices of Automatic Systems

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According to its author, the object of this article is the systematized presentation of all information essential for correct selection of the contact system, with consideration for its operating conditions. According to the editor of this collection, this particular article may be of use to students of schools of higher education. There are 9 tables of specifications.

Bibliography

L'vov, N.S., Engineer. Automation of Butt Welding in Random Direction  
The author reports on recent developments in the automation of welding processes which attempt to increase the productivity and economy of these processes, with simultaneous improvement of the quality of the welded seam. A review of existing methods of controlling the position of the welding device and basic considerations on the design of automatic welding machines are presented. Some alternative designs of automatic welding machines based on the use of servo-mechanisms are discussed.

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Bibliography

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ILLANOV, G.M

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*Teoriya Istoricheskoi i yazykovnoy strukturalnoy ustroystva i teorii sovetskoy teorii literatury i ikh primeneniye k avtomaticheskimi ustroystvami* (Theory of Literature and Its Application to Automatic Devices), Transactions of the Conference Oct. 16-20, Moscow, 1959. 381 p. No. of copies printed not given.

**Sponsoring Agency:** Academy of the USSR Sciences. **Objective:** technological and scientific research.

**Principal Investigator:** V. G. Zubovskii, Academician, Editorial Committee; V. A. Dobson, Doctor of Technical Sciences, Institute of Technical Sciences, 4/10, 1st-2nd floors, 125080, Moscow, U.S.S.R.

**Technical Sciences:** P. I. Kuznetsov, Doctor of Technical Sciences, 4/10, 1st-2nd floors, Institute of Technical Sciences, Academy of Sciences USSR; A. I. Lebedev, Candidate of Technical Sciences, P. I. Kuznetsov, Doctor of Physics and Mathematics, A. I. Kabanov, Doctor of Technical Sciences, D. S. Petry, Corresponding Member, Academy of Sciences USSR, 1-2, Pervoy, Doctor of Technical Sciences, G. M. Ulanov, Doctor of Technical Sciences, E. I. Litvinov, Academician, Academy of Sciences USSR; P. I. Chistyakov, Candidate of Technical Sciences, and B. M. Chumakov, Candidate of Technical Sciences; Tech. Sci.: G. T. Kravtsov.

**PURPOSE:** This collection of papers is intended for engineers and other specialists working in various fields of automation.

**COTWALD:** The collection includes reports and papers presented at the Conference on the Theory of Invariances and its Applications to Automatic Devices, which was called by the Odessa City Technical School (Department of Electrical Engineering) and the Institute of Mathematics (Institute of Electrical Engineering) of the Academy of Sciences of the Ukrainian SSR and convened in Kyiv October 16 - 20, 1968. The papers presented are concerned with mathematical automatic control systems and their properties; they also deal with the theory of invariance as a means of maintaining the invariance of the quality to be affected by the system to the disturbances acting on the system. The reports treat the physical aspect to the disturbances acting on the system. The papers treat the physical and mathematical formulations of invariance to automatic control systems; they also consider methods for designing and calculating invariant systems and problems connected with specific cases of practical applications of compensation in various automatic systems. On the basis of these reports it was established by the Conference that, in utilization of the conditions of compensation and the principle of invariance, it is possible to produce automatic systems and various arrangements which are more perfect from the viewpoint of quality of the regulation and control process, stability, simplicity of construction, and reliability of operation. The following members of the Kiev Seminar on Automatic Control were designated as organizers of the conference: A.I. Kabanovskiy, A.G. Ivanenko, T.M. Korotkiy, O.N. Lyubimovskiy, N.M. Gumenyuk, S.A. Kachanovsky, and V.V. Chervinsky. References accompany each article.

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7. Trubnitskiy, A.B. Combined Regulation as the General Case of Regulation of State and Negatives. 112
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9. Kryukovskiy, D.M. On the Quest-Invariance of Transient Processes in Control Systems of Automatic Control of Mice Balists 145
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ALEKPEROV, V.P., inzh.; ATOVMYAN, I.O., inzh.; ZUYEV, V.I., inzh.; KAVUN, Ye.S., kand.tekhn.nauk; KOGAN, B.Ya., kand.tekhn.nauk; KOPAY-GORA, P.N., kand.tekhn.nauk; KULAKOV, A.A., inzh.; LEBSEDEV, A.N., kand.tekhn.nauk; PAPERNOV, A.A., doktor tekhn.nauk; PEL'POR, D.S., doktor tekhn.nauk; PLOTNIKOV, V.N., kand.tekhn.nauk; RUZSKIY, Yu.Ye., kand.tekhn.nauk; SOLODOVNIKOV, V.V., doktor tekhn.nauk; TOPCHYEYEV, Yu.I., kand.tekhn.nauk; ULANOV, G.M., kand.tekhn.nauk; SHRAMKO, L.S., kand.tekhn.nauk; DOBROGURSKIY, S.O., doktor tekhn.nauk, retsenzent; KAZAKOV, V.A., kand.tekhn.nauk, retsenzent; PETROV, V.V., kand.tekhn.nauk, retsenzent; KHAVKIN, G.A., inzh., retsenzent; SOLODOVNIKOV, V.V., prof., doktor tekhn.nauk, red.; VITENBERG, I.M., kand.tekhn.nauk, nauchnyy red.; MOLDAVER, A.I., kand.tekhn.nauk, nauchnyy red.; KHETAGUROV, Ya.A., kand.tekhn.nauk, nauchnyy red.; POLYAKOV, G.F., red.izd-va; KONOVALOV, G.M., red.izd-va; SOKOLOVA, T.F., tekhn.red.

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 (Automatic control) (Electronic apparatus and appliances)  
 (Electronic calculating machines)

**Elementy sistemy avtomaticheskogo regulirovaniya. ch. 1:**  
**Chuvstvitel'nyye ustroystva i ipolnitel'nyye elementy**  
 (Elements of Automatic Control Systems. pt. 1. Sensing,  
 Amplifying and Control Elements) Moscow, Mashiz, 1959. 722 p.  
 (Series: Osnovy avtomaticheskogo regulirovaniya, t. 2) Errata  
 slip inserted. 13,000 copies printed.

**Reviewers:** P. P. Galtzyov, Candidate of Technical Sciences, V. A. Karnev, Doctor of Technical Sciences, P. P. Klobukov, Candidate of Technical Sciences, V. G. Petrov, Candidate of Technical Sciences, V. G. Ryzhikov, Candidate of Technical Sciences, Yu. B. Rykova, Ph. D., Agronomist, Doctor of Agricultural Sciences, B. D. Sadovnikov, Candidate of Technical Sciences, A. G. Sayvel', Candidate of Technical Sciences, and A. A. Vityaykov, Candidate of Technical Sciences; Scientific Eds.: I. M. Vitenberg, Candidate of Technical Sciences, A. I. Moldaver, Candidate of Technical Sciences, and Yu. Ye. Rusak, Candidate of Technical Sciences; Ed. of Series: V. V. Solodovnikov, Doctor of Technical Sciences, Professor; Eds. of Publishing House: G. P. Polyakov, A. G. Adinova, and G. M. Konevalov; Tech. Eds.: A. Ya. Titkhanov and T. P. Sokolova; Managing Ed. for Literature on Machine Building and Instrument Construction (Mashingiz): N. V. Polkovovskiy, Engineer.

**PURPOSE:** This book is intended for engineering and scientific personnel and for instructors of vtuzes concerned with problems of automatic control.

**CONCLUSIONS.** The authors explain the principles of operation of automatic control elements and servomechanisms. They also discuss typical automatic control circuits and present equations of dynamic and static characteristics of automatic control elements. They describe the characteristics of automatic control elements and transducers. The book contains Sections I, II, and III of Part I, Volume II. "Principles of Automatic Control." The following persons participated in writing the present work: D. A. Braslavsky, Candidate of Technical Sciences, paragraph 4 of Chapter III and paragraphs 1-8 and 14 of Chapter IV; I. S. Gol'dfarb, Doctor of Technical Sciences, paragraphs 1, 2, 5 and 7 of Chapter I; A. I. Gusevko, Candidate of Technical

Sciences, paragraph 1 of Chapter VIII, K. Ye. Dmitriyev, Candidate of Technical Sciences, paragraph 1 of Chapter VIII, V. A. Katsibailov, Engineer, Chapter XIV, P. P. Lobozov, Candidate of Technical Sciences, paragraphs 2 and 3 of Chapter VIII, P. P. Kravtsov, Candidate of Technical Sciences, paragraph 1 of Chapter XIII, and Chapter XIV, D. S. Tolpov, Doctor of Technical Sciences, paragraphs 1-3 of Chapter XIII, V. V. Petrov, Candidate of Technical Sciences, paragraph 1 of Chapter XIII, and Chapter VII, V. A. Kozminskii, Doctor of Technical Sciences, paragraphs 1, 3-5 and 8-10 of Chapter XIII, and Chapters 13 and 17 of Chapter II, paragraph 3 of Chapter XIII, and Chapter 15, B. D. Sadovskii, Candidate of Technical Sciences, paragraphs 1 and 2 of Chapter II, A. A. Sokolov, Candidate of Technical Sciences, Chapter VI, V. K. Titov, Candidate of Technical Sciences, paragraphs 9-13 of Chapter IV, paragraph 4 of Chapter I, and Chapter II, M. M. Gusev, Candidate of Technical Sciences, paragraph 1 of Chapter II, Ye. V. Filiguchin, Candidate of Technical Sciences, paragraphs 6-11, 14-16 and 18-29 of Chapter II, A. V. Kostin, Candidate of Technical Sciences, Chapter VI, and Chapter 10, paragraph 1 of Chapter XIII, and Chapter 1 of Chapter XIII, and paragraph 1 of Chapter XIII. References appear at the end of each chapter.

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 KALASHNIKOV, V.A., inzh.; KLOBUKOV, P.P., kand.tekhn.nauk; KLUB-  
 NIKIN, P.F., kand.tekhn.nauk; KRASSOV, I.M., kand.tekhn.nauk;  
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 FILIPCHUK, Ye.V., kand.tekhn.nauk; KHARYBIN, A.Ye., kand.tekhn.  
 nauk; KHOKHLOV, V.A., kand.tekhn.nauk; GALTSEYEV, F.F., kand.tekhn.  
 nauk, retsenzent; KARASEV, V.A., doktor tekhn.nauk, retsenzent;  
 RAGOZIN, Yu.D., kand.tekhn.nauk, retsenzent; REYNGOL'D, Yu.R., inzh.,  
 retsenzent; RYABOV, B.A., doktor tekhn.nauk, retsenzent; SAYBEL',  
 A.G., kand.tekhn.nauk, retsenzent; SHEVYAKOV, A.A., kand.tekhn.nauk,  
 retsenzent; SOLODOVNIKOV, V.V., prof., doktor tekhn.nauk, red.;  
 VITENBERG, I.M., kand.tekhn.nauk, nauchnyy red.; MOLDAVER, A.I.,  
 kand.tekhn.nauk, nauchnyy red.; POLYAKOV, G.F., red.izd-va; AKIMOVA,  
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 red.; SOKOLOVA, T.F., tekhn.red.

[Fundamentals of automatic control] Osnovy avtomaticheskogo reguliro-  
 vania. Vol.2. [Elements of automatic control systems] Elementy sistem  
 avtomaticheskogo regulirovania. Pt.1. [Sensing devices, amplifiers,  
 and actuators] Chuvstvitel'nye, usilitel'nye i ispolnitel'nye elementy.  
 Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry. 1959. 722 p.

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(MIRA 12:4)

(Electronic apparatus and appliances) (Electronic calculating machines)

SOLODOVNIKOV, Vladimir Viktorovich; USKOV, Arkadiy Sergeyevich; ULANOV,  
G.M., doktor tekhn.; POLYAKOV, G.F., red.; CHERNOVA, Z.I.,  
tekhn.red.

[Statistical analysis of control systems; statistical methods  
for determination of dynamic characteristics of automatic control  
systems during normal operation] Statisticheskii analiz ob"ektov  
regulirovaniia; statisticheskie metody opredeleniia dinamicheskikh  
kharakteristik ob"ektov avtomaticheskogo regulirovaniia v protsesse  
ikh normal'noi eksploatatsii. Moskva, Gos.nauchno-tekhn.izd-vo  
mashinostroit.lit-ry, 1960. 130 p. (MIRA 13:5)  
(Automatic control) (Mathematical statistics)

STREYTS, Vladimir [Strejc, Vladimir], inzh.; BALDA, Milan, dotsent, inzh.;  
KRAMPERA, Miloslav, kand.tekhn.nauk, inzh.; BARBAROV, B.N.[translator];  
ULANOV, G.M., doktor tekhn.nauk, red.; GOR'KOVA, A.A., vedushchiy  
red.; FEDOTOVA, I.G., tekhn.red.

[Use of automatic control in industry] Primenenie avtomaticheskogo  
regulirovaniia v promyshlennosti. Moskva, Gos.nauchno-tekhn.izd-vo  
neft. i gorno-toplivnoi lit-ry, 1960. 228 p. (MIRA 13:7)  
(Automatic control)

ULANOV, G., doktor tekhn.nauk

"Automatic control and computing equipment." Reviewed by  
G.Ulanov. NTO 2 no.2:63-64 F '60. (MIRA 13:5)  
(Automatic control) (Calculating machines)



16.0000

S/020/62/144/006/006/015  
B108/B102

AUTHOR: Ulanov, G. M.

TITLE: Optimization of automatic control systems and theory of  
K(D) representation

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 144, no. 6, 1962, 1249-1250

TEXT: The optimization of automatic control systems, i.e., the finding of a function  $\Phi_{opt}$  involving minimum difference between the desired and achieved values of the state of the system is considered. It is shown that such an optimum system (N. Wiener, Extrapolation, Interpolation and Smoothing of Stationary Time Series, N. Y. - London, 1949) can be got by imposing the condition of K(D) representation,  $\Phi_{opt}(D)f(t) = 0$  with  $\Phi_{opt} \neq 0$  and  $f(t) \neq 0$  ( $f(t)$  - perturbation). This representation was introduced by V. S. Kulebakin (UMN, 6, no. 5, 211 (1951); DAN, 68, no. 5 (1949); 77, no. 2 (1951)).

1/2

Card 1/2

Optimization of automatic control...

S/020/62/144/006/006/015  
B108/B102

PRESENTED: January 16, 1962, by A. Yu. Ishlinskiy, Academician

SUBMITTED: December 25, 1961

Card 2/2

PETROV, B. N.; ULANOV, G. H. ; YEMEL'YANOV, S. V.

"Invariancy and Optimization in Automatic Systems  
with Nonflexible and Variable Structure.

Paper to be presented at the IFAC Congress held in  
Basel, Switzerland, 27 Aug to 4 Sep 63

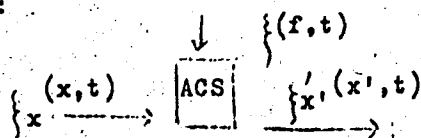
S/020/63/148/006/005/023  
B112/B186

AUTHORS: Kochubiyevskiy, I. D., Ulanov, G. M.

TITLE: Information conditions for the invariance of linear automatic control systems

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 148, no. 6, 1963, 1268-1270

TEXT: This paper is an attempt to reduce information theory and the theory of statistical optimization to the determination of invariance conditions. An automatic control system (ACS) is symbolized by the following graph:



For such a system the equation of information reads

Card 1/2

Information conditions for the ...

S/020/63/148/006/005/023  
B112/B186

$$\mathcal{H}_1(\xi) = \mathcal{H}_1(\xi) + \frac{1}{2W} \int \log |\Phi(j\omega)|^2 d\omega. \quad (2)$$

Some consequences are derived from the condition of absolute invariance. In particular, it is shown that each Wiener optimum system can be determined by means of the theory of invariance. There is 1 figure.

PRESENTED: July 23, 1962, by B. N. Petrov, Academician

SUBMITTED: July 1, 1962

Card 2/2

ULANOV, G. M.

"Sur le calcul des champs potentiels par les machines électroniques."

report submitted for 4th Intl Cong, Cybernetics, Namur, Belgium, 21-25 Oct 64.

KULEBAKIN, V.S., akademik, otv. red.; PETROV, B.N., akademik, otv. red.; BODNER, V.A., doktor tekhn. nauk, red.; VORONOV, A.A., doktor tekhn. nauk, red.; IVAKHNENKO, A.G., red.; ISHLINSKIY, A.Yu., akademik, red.; KOSTYUK, O.M., kand. tekhn. nauk, red.; KRASSOV, I.M., kand. tekhn. nauk, red.; KUNTSEVICH, V.M., kand. tekhn. nauk, red.; KUKHTENKO, A.I., red.; RYABOV, B.A., doktor tekhn. nauk, red.; SIMONOV, N.I., doktor fiz.-mat. nauk, red.; ULANOV, G.M., doktor tekhn. nauk, red.; FEDOROV, S.M., kand. tekhn. nauk, red.; TSYPKIN, Ya.Z., doktor tekhn. nauk, red.; CHINAYEV, P.I., kand. tekhn. nauk, red.; KRUTOVA, I.N., kand. tekhn. nauk, red.; RUTKOVSKIY, V.Yu., kand. tekhn. nauk, red.

[Invariancy theory in automatic control systems; transactions] Teoriia invariantnosti v sistemakh avtomaticheskogo upravleniia; trudy. Moskva, Nauka, 1964. 503 p.  
(MIRA 18:2)

1. Vsesoyuznoye soveshchaniye po teorii invariantnosti i yeye primeneniyu v avtomaticheskikh ustroystvakh. 2d, Kiev, 1962. 2. Chlen-korrespondent AN Ukr.SSR (for Ivakhnenko, Kukhtenko).

TOPIC TAGS: differential equation, ordinary differential equation,  $K(D)$

$$E(D) x(t) = X(D) f(t), \quad (1)$$



"APPROVED FOR RELEASE: 03/14/2001

CIA-RDP86-00513R001857910015-4

ASSOCIATION: None

APPROVED FOR RELEASE: 03/14/2001

CIA-RDP86-00513R001857910015-4"

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ACCESSION NR: AT4045209

theory of  $\lambda(D)$  image formation  
has: 6 figures and 26 numbered formulas.

ASSOCIATION: none

SUBMITTED: none

KHRAMOY, A.V. [deceased]; MEYEROV, M.V.; AYZERMAN, M.A.; ULANOV, G.M.;  
TSYPKIN, Ya.Z.; FEL'DBAUM, A.A.; LERNER, A.Ya.; PUGACHEV, V.S.;  
IL'IN, V.A.; GAVRILOV, M.A.

Work of the Institute of Automatic and Remote Control  
on the development of the theory of automatic control during  
1939-1964. Avtom. i telem. 25 no. 6:763-807 Je '64.

(MIRA 17:7)

L 50185-65 EWT(d)/EWP(v)/EWP(k)/EWP(h)/EWP(l) Po-4/Pq-4/Pf-4/Pg-4/Pk-4/ 7  
 Pl-4 IJP(c) BC

AM5015052

*Book Exploitation*  
 Izvoiskiy, V. G. (Engineer), and others [EDITORS ?]

Instrument manufacture and automatic control devices; handbook in five volumes. v. 4: Automatic control and automatic devices (Priborostroyeniye i sredstva avtomatiki; spravochnik v pyati tomakh. t. 4: Avtomaticheskoye regulirovaniye i sredstva avtomatiki). Moscow, Izd-vo "Mashinostroyeniye", 1965. 716 p. illus., biblio., index. Errata slip inserted. 24700 copies printed.

TOPIC TAGS: automation, automatic control systems, automatic controller classification, static linearization, designing complex automation

PURPOSE AND COVERAGE: This is the fourth volume of the handbook: "Instrument manufacture and automatic control devices." It consists of two parts. Part one presents the fundamentals and definitions of the theory of automatic control, modern methods of mathematical analysis and synthesis of linear and nonlinear systems, and the methods of their dynamic computation. The second part of

Cord 1/4

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the volume contains descriptions of typical electrically, pneu-  
matically, and hydraulically operated controllers, actuating  
mechanisms, and control systems. It also gives basic technical  
characteristics of electronic computational techniques applied  
in automation, and elucidates problems of the organization and  
planning of the most widely used systems of automatic control.

TABLE OF CONTENTS [Abridged]:

Part I. Theory and methods of designing automatic control systems

1. Fundamental principles, structure of systems, and a definition  
of the theory of automatic control (Ye. G. Izvol'skiy, L. G.  
Novogranova, and V. V. Glukhov) -- 1-18
2. Objects of automatic control (Yu. Ye. Ruzskiy) -- 23-34
3. Elements of automatic controllers -- 38-132
4. Automatic controllers (Yu. Ye. Ruzskiy) -- 145-176
5. Methods for calculating the dynamics and the statics of SAR  
(system of automatic regulation), the SAC (system of automatic  
control) and servosystems (L. G. Novogranova and V. V.  
Glukhov) -- 176-230

Cord 2/4

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6. Nonlinear characteristics and methods of designing SAR and servomechanisms -- 230-294
7. Static linearization (G. M. Ulanov, and K. A. Pupkov) -- 294-344
8. Variational methods and the theory of accumulative errors -- 344-361
9. Methods for experimental testing of automatic control systems -- 361-387
10. Problems of the theory of automatic control -- 387-419
11. Principles of designing systems of complex automation by

Part II. The means of automation  
applying control computers (A. S. Uskov) -- 419-437

12. Classification of the means of automation (M. Ye. Rakovskiy) -- 437-443
13. Electrical and electronic controllers (V. A. Bodner) -- 443-497
14. Means for automatic regulation and control of electrical drives (T. Z. Portnoy) -- 497-525
15. Electronic computer technology for automatic control and regulation (B. M. Yakubson) -- 525-575
16. Pneumatic controllers and schemes of typical pneumatic SAR (V. S. Prusenko) -- 575-618

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L 50185-65

AH5015052

17. Hydraulic and electrical-hydraulic means of automation and auxiliary devices -- 618-645
18. Designing systems for control and automatic regulation (A. B. Rodov) -- 645-694

SUB CODE: IM

SUBMITTED: 05Feb65

NO REF SOV: 344

OTHER: 051

*me*  
Card 4/4



L 25880-66 EWT(d)/EWP(v)/EWP(h)/EWP(k)/EWP(l)

ACC NR: AR6003994

SOURCE CODE: UR/0372/65/000/009/G005/G006

AUTHOR: Petrov, B. N.; Ulanov, G. M.; Yemel'yanov, S. V.

TITLE: Invariance and optimization systems in automatic control with rigid and variable structure

SOURCE: Ref. zh. Kibernetika, Abs. 9G34R

REF SOURCE: Tr. II Mezhdunar. kongressa Mezhdunar. federatsii po avtomat. upr., 1963. (T. 1). Teoriya nepreryvn. avtomat. sistem. M., 1965, 214-228. Diskus., 229

TOPIC TAGS: automatic control theory, optimal automatic control, correlation function, error correction, servomechanism

ABSTRACT: The authors consider the invariance of automatic regulation systems in the presence of perturbations which are specified specifically. The invariance conditions obtained on the bases of K(D) transforms are generalized to include the case of statistically specified perturbations. For stationary automatic control systems and stationary perturbations, the conditions of the K(D) transforms with respect to the perturbation turn out to be equivalent to the condition of K(D) transforms with respect to its correlation function. A new principle is proposed for constructing systems that are invariant with respect to continuous functions of the control signal, and ensure the absence of a statistical error. It is shown that when using an open cycle with variable structure it is possible to duplicate without statistical errors a broad class of functions of control action. The considered combined servomechanisms

Card 1/2

UDC: 62-509

L 25880-66

ACC NR: AR6003994

with variable structure of open cycle are not very sensitive to changes within a certain range of system parameters. Examples of the use of the proposed construction principle of invariant systems are presented. Eight illustrations. Bibliography of 14 titles. V. M. [Translation of abstract]

SUB CODE: 14, 09

Card 2/2 *K*

L 04700-67 EWT(d)/FSS-2/EEC(k)-2/EWP(1) IJP(c)

ACC NR: AP6032581

SOURCE CODE: UR/0030/66/000/009/0108/0109

AUTHOR: Ulanov, G. M. (Doctor of technical sciences)

ORG: none

TITLE: The development of the invariance theory and its applications

SOURCE: AN SSSR. Vestnik, no. 9, 1966, 108-109

TOPIC TAGS: electronic computer, electronic conference, information theory, automatic control theory

ABSTRACT: The Third All-Union Conference on Invariance Theory and its Applications in Automatic Control Systems organized by the USSR and Ukrainian Academies of Sciences, held in Kiev from 31 May to 4 June, was attended by some 500 scientists and engineers from the USSR, East Germany, Hungary, Poland, and Czechoslovakia. Papers were presented in the following sections: a) general problems of invariance theory; b) combined control systems; c) invariance in sampled-data control systems; d) invariance and sensitivity theory, invariant self-adjusting systems; e) nonlinear invariant systems; f) invariance in many-dimensional automatic control systems; g) application of invariance theory to moving objects; and h) industrial applications of invariant systems.

Card 1/4

L 04700-67

ACC NR: ~~8860~~32581

The papers that were presented and the discussions showed that significant results were obtained in invariance theory. The methods of invariance theory were developed for many-dimensional continuous and sampled data systems (with the use of electronic digital computers). The conditions of controllability and observability in control systems were studied. The theory of many-dimensional invariant systems in the presence of random inputs was developed and a series of methods for synthesizing invariant multiloop systems were proposed. Definite progress was made in developing such trends as parametric invariance, sensitivity theory, and statistical dynamics. In particular, principles were developed for systems with double invariance.

The correlation between invariance theory and information theory was detected. The information characteristics of control processes were introduced on the basis of concepts of the entropy and recognition of processes. Invariance conditions in information form were obtained for the basic concepts of control regimes-stabilizing and reproducing, and equations for the compensation balance were derived in the form of entropy. The analogs of information theory were obtained for B. N. Petrov's two-channel principle and its features in common with the Shannon theorem concerning the direct and compensation information channels were indicated.

Card 2/4

L 04700-87

ACC NR: AP6032581

The studies of self-adjusting systems with the aid of the invariance principle as well as of nonlinear invariant systems with a variable structure were extended. The possibility of increasing the accuracy of systems and of improving their dynamic and operational characteristics in the presence of large external disturbances was shown. Studies important to applications were carried out in the invariance theory of systems with distributed parameters.

The essential difference between this conference and the previous ones is that an extensive analysis was made of designed and already operating automatic control systems. The effectiveness of the application of invariance principles to industry-wide automation and manufacturing of instruments was demonstrated. Realization of control in compound industrial complexes with the aid of electronic digital computers operating on the basis of compensating the disturbances was considered as an entirely new fact. The economic efficiency and reliability of such complex automation systems were estimated for one specific example (Slavyansk sodium plant).

Invariant control systems already operating in the petrochemical industry, metallurgy, construction, and transportation, and also in precision measuring and information systems were considered.

A great deal of attention was paid to papers dealing with development

Card 3/4

L 04700-67

ACC NR: AP6032581

and realization of invariant gyroscopic systems and control systems in flight vehicles. Development of methods for designing gyroscopic systems insensitive to disturbances and for stabilizing. and controlling flight ? vehicles in the presence of disturbances due to wind and under various external loads was considered as the central problem.

In the course of discussions, the question of realizability of invariance conditions in automatic control systems was considered. The necessity of developing invariance theory which could be applied to new fields of automation, including the theory of finite automata, was pointed out. [ATD PRESS: 5094-F]

SUB CODE: 09, 13 / SUBM DATE: none

Card 4/4 EV

*ULANOV, G. N.*

USSR/Processes and Equipment for Chemical Industries-- K-2  
Control and measuring devices. Automatic regulation.

Abs Jour: Ref Zhur-Khimiya, No 3, 1957, 10652

Author : Petrov, B. N., Petrov, V. V., and Ulanov, G. N.

Inst : Academy of Sciences USSR

Title : The Conference on Automatic Regulation Theory

Orig Pub: Vestn. AN SSSR, 1956, No 8, 60-62

Abstract: No abstract.

Card 1/1

MALAKHOV, Yu.A., dotsent; SHOROKHOV, V.V., veter. vrach.; ULANOV, I.A., veter. vrach; TALISHEVSKAYA, M.Ye., veter. vrach.

Diagnosis and prophylaxis of leptospirosis in suckling pigs.  
Veterinariia 42 no.7:31-34 JI '65. (MIRA 18:9)

1. Moskovskiy tekhnologicheskii institut myasnoy i molochnoy promyshlennosti.



ULANOV, Kh. K.

(1) 220

Meteorological Abst.  
Vol. 5 No. 1  
Jan. 1954  
Part 2  
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General Oceano-  
graphic Meteorology

5A-136 ✓ 551.354(26)  
Ulanov, Kh. K., *Izmenenie skorosti vetra s vysotoi nad morem.* [The change of the velocity of wind with height above the sea.] *Akademii Nauk SSSR, Izvestia, Ser. Geogr. i Geofiz.*, No. 3:308-314, 1939. 3 figs., 7 refs., 3 eqs. In Russian; English summary, p. 313-314. Abstract in: *American Meteorological Society, Bulletin*, 23(2): 81, Feb. 1942. DLC—Wind velocity observed at heights of 30, 100, 200 and 300 cm above a raft and simultaneous humidity and temperature observations at 10 or 20, 50, 100 and 200 cm were carried out during the White Sea expedition of the State Hydrological Institute (U.S.S.R.) in the summer of 1938. Results show vertical distribution of velocities (30-300 cm above sea) not in agreement with Rosby theoretical curves, wind velocity distribution with height not dependent on stratification of temperature in layer 2-3 m above sea, vertical gradient of wind velocities increasing with increasing velocity, and vertical gradient above 3-4 m decreasing with increasing height. *Subject Headings:* 1. Micrometeorology 2. Marine meteorology 3. Wind profiles 4. White Sea.

ULANOV, KH. K.

PA 246T80

USSR/Geophysics - Oceanography

Mar/Apr 53

"Review of V.A. Snezhinskiy's Book 'Practical Oceanography,'" Kh. K. Ulanov (reviewer)

"Iz Ak Nauk SSSR, Ser Geograf" No 2, pp 59, 60

Favorable review of "Prakticheskaya Okeanografiya," published in 1951 by the Hydromet Press; 600 pp. States that author's work is a valuable contribution to the study and future use of oceans by the USSR.

246T80

ULANOV, Kh. K.

Observations of sea disturbances. Meteor. i gidrol. no. 3:58-59  
Mr '53. (MIRA 8:9)

1. Rishskaya geofizicheskaya observatoriya.  
(Waves) (Ocean)

AVERKIYEV, M.S. [author]; ULANOV, Kh.K. [reviewer]; SAMOYLENKOV, V.S. [redaktor].

"Meteorology." M.S. Averklev. Reviewed by Kh.K. Ulanov. Vest. Mosk. un. 8  
no. 5: 139-140 My '53. (MLBA 6:8)

1. Rishskaya Geofizicheskaya observatoriya (for Ulanov).  
(Meteorology) (Averklev, M.S.)

SOV/10-59-5-14/25

AUTHOR: Ulanov, Kh.K. and Neglyad, K.V.

TITLE: On the Classification and Denomination of the Science of the Seas

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geograficheskaya, 1959, Nr 5, pp 98-100 (USSR)

ABSTRACT: At present there is no generally accepted classification and denomination of the science for the study of the World Ocean. The author proposes the name of "Oceanology" for this science. Up to now many names are used, such as oceanography, oceanology, sea hydrology, sea hydrometeorology, physics of the sea, or even (especially in foreign scientific literature) hydrography. The author cites the following scientists who introduced one of the above names: Yu.M. Shokal'skiy, G.R. Zhukovskiy, Yu.V. Istoshin, V.S. Nazarov, A.M. Muromtsev, V.A. Snezhinskiy, N.N. Zubov, A.P. Loydis, L.A. Zenkevich, N.V. Malinovskiy, V.G. Kort, B.A.

Card 1/2

SOV/10-59-5-14/25

On the Classification and Denomination of the Science of the Seas

Shipov, I.B. Shpindler, B.P. Orlov, A.K. Leonov, N.A. Belinskiy, M.V. Klenova, A.V. Ogiyevskiy, and B.A. Apollov. According to the author "Oceanology" is a science which studies the substance of all phenomena and processes occurring in oceans and seas, the regular connection among them, their reaction in specific physical and geographical conditions and the possibility of their forecast. There are 14 Soviet references.

Card 2/2

ULANOV, Kh.K.

Anomalies in water temperature in the eastern part of the central  
Caspian Sea. Izv. AN Azerb. SSR. Ser. geol.-geog. nauk no.4:79-  
92 '60. (MIRA 14:1)

(Caspian Sea--Ocean temperature)

ULANOV, Kh.K.

Estimating the heat of continental runoff. Meteor. i gidrol.  
no. 8:43-44 Ag 60. (MIRA 13:81  
(Ocean temperature) (Runoff)



ULANOV, Kh.K.

Water loss due to mechanical evaporation from the surface of the  
Caspian Sea. Dokl. AN SSSR 135 no.3:584-586 II '60. (MIRA 13:12)

1. Institut geografii Akademii nauk AzerbSSR. Predstavleno akad.  
N.M.Strakhovym.  
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(MIRA 15:2)

(Russia--Relations (Military) with East Germany)



IVANOV, B.; ULANOV, M.

Mandolin quintet played on one instrument. IUn. tekhn. 5 no. 12:50-  
63 D '60. (MIRA 14:1)  
(Musical instruments, Electronic)

1st AND 2nd ORDERS										PROCESSES AND PROPERTIES INDEX										3rd AND 4th ORDERS									
<p>ca</p> <p>5</p> <p>Photogravure film. V. D. Potapov and M. S. Ulanov. Russ. 37,603, July 31, 1940. The film, impregnated with a glue compn. contg. diphenylamine, is sensitized with <math>\text{Na}_2\text{Cr}_2\text{O}_7</math> and an aq.-alc. soln. of Na benzoate. The image is developed with an aq.-alc. soln. of <math>\text{Ca}(\text{NO}_3)_2</math> with the addn. of <math>\text{HNO}_3</math>, washed with hot water and treated with an aq.-alc. soln. of a mordant wood dye that unites with the Cr left in the film.</p>																													
<p>ASA-ILA METALLURGICAL LITERATURE CLASSIFICATION</p>																													
<p>1st ORDER</p>										<p>2nd ORDER</p>										<p>3rd ORDER</p>									
<p>1st ORDER</p>										<p>2nd ORDER</p>										<p>3rd ORDER</p>									

ULANOV, N.A.

Innovators of the Petropavlovsk Leather Factory. Kozh.-obuv.prom.  
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(Kazakhstan--Leather industry--Technological innovations)

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Potentiometric determination of the molecular weights of organic salts  
and acids. Krat.sob. BKNII no.3:56-60 '62. (MIRA 16:5)  
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(Fourier's series)

ULANOV, R.N., inshener; FOKHT, L.G., inshener.

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MARDANOV, V.; ULANOV

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(Motorcycles)

(MLRA 10:6)



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(Leningrad--Street cleaning machinery)

ULANOV, Rem Nikolayevich; LEVCHENKO, Ya.V., inzh., red.; VASIL'YEV, Yu.A., red. izd-va; GVIRTS, V.L., tekhn. red.

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LANTSOV, Vladimir Anatol'yevich; ULANOV, Rem Nikolayevich; LEVCHENKO,  
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MENKO, V.P., inzh., red.

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18 no.11:16-17 N '58. (MIRA 11:12)  
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APPROVED FOR RELEASE: 03/14/2001

CIA-RDP86-00513R001857910015-4

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(IODINE--ISOTOPES)

(THYROID GLAND)

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URANOV, Yu.V.

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1. Iz laboratorii chastnoy farmakologii Instituta farmakologii i  
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Vol. 60, No. 4, July/Aug. 1956

IDOJARAS

SCIENCE

B udaepest, Hungary

So: East European Accession, Vol. 6, No. 2, Feb. 1957

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USSR/Biology - Plant pathology

Card 1/1 Pub. 22 - 40/47

Authors : Ryzhkov, V. L.; Kabachnik, M. I., Memb. Corresp. of Acad. of Sc. USSR;  
Tarasevich, L. M.; Medved', T. Ya.; Zeytlenok, N. A.; Marchenko, N. K.;  
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Title : Biological activity of alpha-aminophosphinic acids

Periodical : Dok. AN SSSR 98/5, 849-852, Oct 11, 1954

Abstract : The biological activity of alpha-aminophosphinic acids (toxic when in large concentrations), is discussed. The biological activity of these acids is best expressed in the inhibition of virus multiplication in the mosaic disease of tobacco. The effect of these acids and glycol on the titer of influenza virus in growing chicken embryos was investigated and the results are described. Eleven references: 7-USSR; 2-USA; 1-French and 1-German (1930-1953). Tables.

Institution : Acad. of Sc. USSR, Institute of Elementary-Organic Compounds and the Academy of Medical Sciences USSR, The D. I. Ivanov Institute of Virology

Submitted : July 7, 1954



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(Methane--Toxicology)

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